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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,680	07/28/2003	Georgi A. Atanasov	A213 1010.1	4613
26158	7590	09/23/2004	EXAMINER	
WOMBLE CARLYLE SANDRIDGE & RICE, PLLC			LEPISTO, RYAN A	
P.O. BOX 7037			ART UNIT	
ATLANTA, GA 30357-0037			PAPER NUMBER	
			2883	

DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/627,680

Applicant(s)

ATANASOV, GEORGI A.

Examiner

Ryan Lepisto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 11,12,23,24 and 26-32 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33-44 is/are allowed.
- 6) ☒ Claim(s) 1,2,8,14 and 22 is/are rejected.
- 7) ☒ Claim(s) 3-7,9,10,13,15-21 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group I, which are claims 1-10, 13-22, 25 and 33-44, drawn to an optical monitoring system for monitoring thin film deposition, a thin film substrate deposition device, and a deposition chamber having an optical monitoring system therein suitable for monitoring thin film deposition, classified in class 385, subclass 16, in the reply filed on September 02, 2004 is acknowledged. The applicant did not disclose a reason for traverse.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 11-12, 23-24, and 26-32 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected group II, drawn to an apparatus and method for optically monitoring thin film deposition on a substrate, classified in class 356, subclass 630, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on September 02, 2004.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1 and 8** are rejected under 35 U.S.C. 102(b) as being anticipated by **Grimbergen et al (US 6,129,807)** (Grimbergen). Grimbergen teaches (Figure 1) an optical monitoring system for monitoring processing of a substrate, said system comprising: a support bridge (108 and support below holding up substrate support 108) configured to be attached on an inside of a deposition chamber (100); a first fiber optic collimator (126) (column 4 lines 14-15) optically coupled to said support bridge (108 and support below holding up substrate support 108); a first fiber (127) for incoming light coupled to said first fiber optic collimator (126); and a second fiber (129) for outgoing light optically coupled to said first fiber optic collimator (126), wherein the substrate comprises a monitored area (column 5 lines 22-29) that is monitored by collimated light from said first fiber optic collimator (126).

4. **Claims 1, 2, 14 and 22** are rejected under 35 U.S.C. 102(e) as being anticipated by **Somekh et al (US 6,381,021)** (Somekh). Somekh teaches (Figures 1 and 5) an optical monitoring system for measuring reflectivity of deposited films, said system comprising: a support bridge (104 and support below holding up substrate support 104) configured to be attached on an inside of a chamber (103); a first fiber optic collimator (276) optically coupled to said support bridge (104 and support below holding up

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substrate support 104); a first fiber channel (270) for incoming light coupled to said first fiber optic collimator (276); and a second fiber (214) for outgoing light optically coupled to said first fiber optic collimator (276), a substrate holder (104) configured to hold the substrate (106); and a first blocker (126) that prevents incoming deposition material from contacting at least a first portion of the substrate (106) and a second blocker (116) that prevents incoming deposition material from contacting at least a second portion of the substrate (106).

Allowable Subject Matter

5. **Claims 3-7, 9-10, 13, 15-21 and 25** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. **Claims 33-44** are allowed. Claims 33-44 are allowable over the prior art of record because the latter, either alone or in combination, does not disclose nor render obvious a first or second shutter that is movable between an open and closed state allowing and not allowing incoming deposition material from contacting a portion of a substrate, a fiber optic collimator comprising a two-fiber ferule, an alignment glass rod, a tap optical filter and a GRIN lens, and a second collimator coupled to a second fiber optic collimator, in combination with the rest of the claimed limitations.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **Miyamura et al (US 2002/0108848)** teaches a method for preparing an optical thin film using a shutter that can be opened and closed and a monitoring system with fibers and a laser source.
- **Felts et al (US 4,888,199)** teaches a plasma thin film deposition process that includes a chamber, substrate holder, fibers and a baffle to block deposition material.
- **Zhang et al (US 2002/0075486)** and **Takeuchi et al (US 5,923,429)** teach a refractive index monitoring and control system for thin film deposition that includes optical fiber, a collimator lens, a substrate and a laser source, but does not include a shutter system.
- **Holland (US 4,311,725)**, **Giapis et al (US 5,002,631)**, **Takahashi et al (US 2004/0008435)**, **Sullivan et al (US 6,110,337)** and **Lu (US 5,880,823)** teach a control of deposition of thin films using optical components.
- **Ohta et al (US 4,855,013)** teaches a method of controlling the thickness of thin crystal films using a complex shutter system and optical monitoring.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-F 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

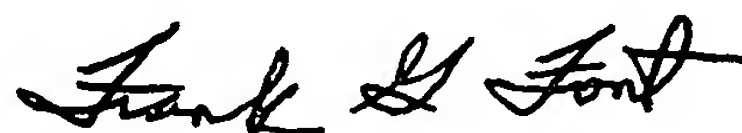
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ryan Lepisto

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Date: 9/20/04



Frank Font

Supervisory Patent Examiner

Technology Center 2800